

Development of the Cross-Cultural Competence Inventory (3CI)

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ABSTRACT

To date, there are no current validated instruments designed to assess cross-cultural competence (3C) in the military domain. To address this need, we developed the Cross-Cultural Competence Inventory (3CI), a 58-item self-report instrument to measure the six hypothesized dimensions of 3C. The purpose of this tool is to assist commanders in evaluating the readiness of their troops to interact effectively and appropriately with foreign nationals, multi-national coalition forces, and other individuals, agencies and organizations.

Keywords: Cross-cultural Competence, Military Readiness, Validation

INTRODUCTION

Peacekeeping and stability operations are central to today's military missions. Within such contexts, the need to establish and maintain relationships with local populations is essential. As Marine Corps General Charles C. Krulak (1999) noted, lower ranking personnel often represent American foreign policy across humanitarian assistance, peacekeeping, and traditional operations. As our efforts in Afghanistan and Iraq illustrate, the military is increasingly involved in advising and training roles as well (U.S. Department of Army, 2006, as cited in Zbylut et al., 2009). Enlisted personnel have been called up to engage in such diverse duties as serving as town mayor of an Iraqi village, negotiating with tribal leaders in Afghanistan, or training indigenous forces worldwide (Stringer, 2009). Therefore, it seems that no matter what the job, rank, or specific mission, working with foreign counterparts to create and maintain stability in fragile regions of the globe is critical, and the potential for cross-cultural conflict and international-level consequences of incompetence is high (Abbe, Gulick, & Herman, 2007). For these reasons, the Department of Defense has identified 3C, the capability to interact effectively and appropriately with others who are linguistically and culturally different from oneself, as a critical determinant of success in military missions today.

UNDERSTANDING CROSS-CULTURAL COMPETENCE

In order to understand and assess this multidimensional construct, a two-tiered approach was undertaken. An extensive review of the literature provided a theoretical domain upon which to base a deductive approach to item development. However, because of the lack of consensus among researchers and academicians, an inductive approach to item development was also employed. Following extensive literature review (Ross & Thornson, 2008), in-depth interviews were conducted with subject matter experts (SMEs). Qualitative data were collected from nine higher-ranking enlisted Army soldiers and Army officers who had been deployed to countries outside the United States (Ross, 2008). Thus, both inductive and deductive approaches to item generation were undertaken to enhance content validity, or the adequacy with which the measure assesses the domain of interest.

LITERATURE REVIEW

The efforts to identify individuals who possess the relevant characteristics associated with 3C in the military domain have not been fully explored to date. When describing 3C, a variety of constructs (e.g., knowledge, skills, attributes, cognitive dimensions, and attitudes) have been proposed and measured across different academic and scientific disciplines. Research into what types of people are likely to succeed in living and working outside their country of origin for extended

periods of time (e.g., expatriate managers, study-abroad students, Doctors without Borders, and Peace Corps volunteers) has accumulated. We explored several of these validated scales, including The Big Five (Costa & McCrae, 1992); the Intercultural Adjustment Potential Scale (ICAPS; Matsumoto et al., 2001); the Multicultural Personality Questionnaire (van der Zee & Van Oudenhoven, 2000); the Scale of Ethnocultural Empathy (SEE; Wang et al., 2003); the Intercultural Sensitivity Inventory (Hammer, Bennett, & Wiseman, 2003); the Intercultural Sensitivity Index (ISI; Olson & Kroeger, 2001, as cited in Abbe et al.); the Intercultural Development Inventory (IDI; Hammer et al., 2003); the Cross-Cultural Adaptability Inventory (CCAI; Kelley & Meyers, 1995); and the Cultural Intelligence Scale (CQS; Earley & Ang, 2003).

Although each of these self-report measures is worthwhile and validated for the purpose for which it was designed, most were developed with civilians in mind, and not specifically for military personnel. However, the very real and important differences between the military and other domains cannot be overlooked. These include the fact that early termination of an assignment is not an option; there exists a power differential between military members and the local population; and finally, our military personnel are under continual threat of attack from foreign nationals (Selmeski, 2007). Additionally, the outcome criteria used to validate these instruments is often adaptation and/or adjustment to living in another culture (Matsumoto et al., 2001; van der Zee & van Oudenhoven, 2000). This is not the goal of the military, who are a culture unto themselves and are there to accomplish a specific mission. For these reasons, a measure designed for the military, based on the mission-specific performance criteria found to be critical to mission success, was developed.

CROSS-CULTURAL COMPETENCE IN MILITARY CONTEXTS

To uncover the specific performance dimensions of a particular domain, interviews with subject matter experts (SMEs) is recommended (Borman, 1991). Therefore, we conducted in-depth interviews with nine recently deployed military service members (Ross, 2008). All nine participants relayed important observations as to what they considered to be the dimensions of mission-specific performance and of these, several had sufficient experience to consider themselves competent in terms of cross-cultural interactions. Whereas the findings were not based on extensive coding and inter-rater reliability, their qualitative analysis offered an initial content validation effort linking the performance dimensions found in the literature to the mission-specific performance criteria found in the field. Specifically, Ross (2008) found that relationship-building was mentioned a total of 68 times by the nine interviewees. The behaviors associated with relationship building have also been examined in the literature with regard to 3C (Cui & Van Der Berg, 1991, as cited in Abbe et al., 2007). In a sample of Peace Corps teachers working in Ghana, a performance factor emerged that included both teaching and interpersonal relationship items (Smith, 1966), where it was found that conveying warmth toward

students, showing consideration toward the local adults, and displaying tact were the most important elements of effective performance. The interviews also revealed that successfully influencing, persuading, and negotiating with foreign nationals, as well as presenting oneself appropriately during interactions, were most often associated with effective cross-cultural performance (Ross, 2008). Such behaviors are likely to lead to the type of short-term rapport-building necessary to move about safely in a threatening environment as well as to lay the foundation for longer-term relationships.

Therefore, via an integration of the interview data and literature review, the developers of the 3CI proposed the following constructs for a measure of military 3C (Ross, Thomson, McDonald, & Arrastia, 2009; Thomson, Ross, & Cooper, 2008): (1) Cross-Cultural Openness; (2) Cross-Cultural Empathy; (3) Willingness to Engage; (4) Self-Efficacy; (5) Emotional Self-Regulation; (6) Cognitive Flexibility; (7) Self-Monitoring; (8) Low Need for Cognitive Closure; and (9) Tolerance of Ambiguity. The items were adapted or revised from existing validated scales that represented each of the proposed nine dimensions, or were written based upon the interview data. This procedure yielded an initial item pool of 144 items, not including five response distortion items.

INSTRUMENT DEVELOPMENT

DATA COLLECTION 1

The initial 144-item 3CI was uploaded to the Defense Equal Opportunity Management Organizational Climate Survey (DEOCS), an electronic survey routinely administered to all services across ranks and geographic locations. After completing the DEOCS, personnel were given the option of participating in the research. The total number of completed surveys analyzed was 792.

Demographic Data

Of those participants who reported gender, 486 were male (75.8%) and 155 were female (24.2%). The ages ranged from 18 to 40 years of age, with 67 participants between 18 and 20 years of age (10.5%); 220 participants between 21 and 24 years of age (34.3%); 179 participants between ages 25 and 29 years of age (27.9%); 114 participants between ages 30 and 35 years of age (17.8%); and 61 participants between the ages of 36 and 40 (9.5%). Of the 607 participants who reported their pay grade, 154 reported a pay grade between 1 and 3 (24%); 324 reported a pay grade between 4 and 6 (50.5%); 76 reported a pay grade between 7 and 8 (11.9%); 14 reported being at a pay grade between 9 and 10 (2.2%); 22 reported being at a pay grade between 11 and 13 (3.4%); and 17 reported being at a pay grade between 14 and 15 (2.7%). Of the 528 total participants who reported their Branch of Service, there were 17 participants in the Air Force (2.7%); 181 participants in the Army (28.2%); only 1 participant in the Coast Guard (0.2%); 149 participants in the

Marine Corps (23.2%); 179 in the Navy (27.9%); and only 1 reported being in an Other Military Service (0.2%).

Exploratory Factor Analysis

An exploratory factor analysis (EFA) was carried out ($N = 792$), using SPSS Version 12.0 and specifying principal-axis factoring (PAF) as the extraction method (cf. Gorsuch, 1983; Nunnally and Bernstein, 1994). Based on the resulting scree plot (Cattell, 1966) and interpretability, six factors were retained and rotated to simple structure using an oblique rotation (i.e., Oblimin with Kaiser Normalization), which converged in 30 iterations. Items were screened on the basis of their rotated factor patterns. The items with the lowest factor loadings ($< .30$) and those that cross-loaded onto other factors were discarded. The six factors appeared interpretable and accounted for 28.7% of the total variance.

Examination of Scale Properties

Following classical test theory, reliability was assessed based on the correlations between the individual items that make up the scale and the variances of the items (Nunnally & Bernstein, 1994). Cronbach's coefficient alpha and item-total correlations were examined and those items with low item-total correlations ($< .30$) were discarded. In addition to this empirical approach, a rational approach was taken so as not to merely seek a high coefficient alpha, which can be achieved simply by having items with maximally similar distributions (Nunnally & Bernstein), but also by examining the content of each item. Five more items were eliminated, resulting in a final 80-item scale, yielding six factors.

DATA COLLECTION 2

In order to re-examine the factor structure of the scales developed in Data Collection 1, as well as to further select the items, the 80-item 3CI was uploaded to the DEOCS. After completing the DEOCS, personnel were again given the option of participating in the research. The total number of usable inventories collected was 4,840.

Demographic Data

Of the 4,840 total participants, 3,872 were male (80%) and 968 were female (20%). The ages ranged from 18 to 40 years of age, with 592 participants between 18 and 20 years of age (12.2%); 2,032 participants between 21 and 24 years of age (42%); 1,130 participants between ages 25 and 29 years of age (23.2%); 672 participants between ages 30 and 35 years of age (13.9%); and 414 participants between the ages of 36 and 40 (8.6%). All but 98 participants reported their pay grade. Of those who reported their pay grades, 1,278 reported a pay grade between 1 and 3 (26.9%); 2,416 reported a pay grade between 4 and 6 (50.9%); 518 reported a pay grade between 7 and 8 (10.9%); 150 reported being at a pay grade between 9 and 10

(3.2%); 208 reported being at a pay grade between 11 and 13 (4.4%); and 172 reported being at the highest pay grades, between 14 and 15 (3.6%). Of the 4,026 participants who reported their Branch of Service, there were 63 participants in the Air Force (1.6%); 1,634 participants in the Army (40.6%); 276 participants in the Coast Guard (6.9%); 705 participants in the Marine Corps (17.5%); and 1,348 participants in the Navy (33.5).

Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was carried out using LISREL (version 8.30; Jöreskog & Sörbom, 1999) in order to confirm the factors determined by the exploratory analysis. The confirmatory analysis was carried out on approximately two-thirds of the total sample ($N = 3,000$), henceforth referred to as the confirmatory sample. We specified the measurement model on the basis of the pattern of item–latent factor relationships found in the exploratory step. Specifically, for each item, the path from its respective latent factor (i.e., regression weight for the factor or path coefficient) was allowed to be freely estimated while the paths from other factors were constrained to be zero. We examined the extent to which the model fit the data by using a combination of several fit indexes (i.e., Chi-square, the goodness of fit index [GFI], the root mean square error of approximation [RMSEA], and the standardized root mean square residual [SRMR], and the comparative fit index [CFI]). We eliminated 22 items on the basis of the magnitudes of their loadings on the assigned factors. The model showed reasonable fit (Chi-square = 18,975.94, $df = 1,580$, $p < .01$; GFI = .82; RMSEA = .061; SRMR = .058; CFI = .82), confirming the factor structure determined in the exploratory analysis. Thus, 58 items were selected to represent the six factors.

Cross-Validation to Confirm Factors

A confirmatory factor analysis was carried out on the remaining one third of the total sample ($N = 1,840$), henceforth referred to as the cross-validation sample, using LISREL (version 8.30; Jöreskog & Sörbom, 1999). We specified the measurement model on the basis of the pattern of item–latent factor relationships found in Step 3. Again, for each item, the path from its respective latent factor (i.e., regression weight for the factor or path coefficient) was allowed to be freely estimated while the paths from other factors were constrained to be zero. We examined the extent to which the model fit the data by using a combination of several fit indexes (i.e., Chi-square, the goodness of fit index [GFI], the root mean square error of approximation [RMSEA], and the standardized root mean square residual [SRMR], and the comparative fit index [CFI]). The model showed an acceptable fit (Chi-square = 9,714.23, $df = 1,580$, $p = .00$; GFI = .85; RMSEA = .053; SRMR = .057; CFI = .87) and the loadings of all the items are reasonably large (all higher than .40). Thus, the 58-item scale was confirmed to represent the six factors.

CONCLUSIONS

PRELIMINARY INTERPRETATION OF FACTORS

The final 3CI consists of 58 items to assess the six hypothesized dimensions of 3C: (1) Cultural Adaptability; (2) Determination; (3) Tolerance of Uncertainty; (4) Self-Presentation; (5) Mission-Focus; and (6) Engagement. It must be kept in mind that these interpretations are preliminary pending criterion-related data collection to link the dimensions of 3C to important performance criteria. The first factor, the Cultural Adaptability factor, is comprised of items that were originally designed to assess several of the predictors found to be associated with 3C in the literature, such as the willingness to engage with other cultures, self-efficacy, cross-cultural empathy, self-monitoring, openness, and cognitive flexibility. An example item is: "When dealing with people of a different ethnicity or culture, understanding their viewpoint is a top priority for me." Therefore, it is hypothesized that those scoring high on this factor would be adaptable across most types of cross-cultural interactions, especially those requiring diplomacy, an open mind, and an ability to empathize with those from other cultures. This scale is positively and significantly correlated with the Determination, Mission-Focused, and Engagement scales (see Table 1).

The second factor is the Determination factor, which seems to represent those who are determined and focused on reaching their goals as well as able to tune out distractions, whether internal thoughts and feelings, or external events. An example item from this scale is: "After an interruption, I don't have any problem resuming my concentrated style of working." Therefore, a person scoring high on this dimension would probably be someone who is determined and confident in his or her ability to reach goals, solve problems and arrive at solutions quickly. This scale is significantly and positively correlated with the Cultural Adaptability, Mission Focus and Engagement scales (*see* Table 1).

Factor III is the Tolerance of Uncertainty factor. This scale may indicate greater comfort in ambiguous situations. An example item from this scale, which is reverse-scored (greater agreement signifies less tolerance) is: "I like to have a plan for everything and a place for everything." Therefore, this factor might be expected to predict those who would perform better in cross-cultural interactions that involve a high level of ambiguity. Contrary to expectations, this scale was negatively correlated or uncorrelated with the other scales (*see* Table 1).

The Self-Presentation factor is comprised of four items which were originally designed to assess the ability to self-monitor. A sample item from this scale is: "In different situations and with different people, I often act like very different persons." This scale was also negatively correlated or uncorrelated with the other scales (*see* Table 1).

The Mission-Focus factor is comprised of items that indicate someone who is focused, rule-oriented, and a team player. This person is likely to be high in conscientiousness. An example item is, “I think that having clear rules and order at work is essential for success.” This scale is significantly correlated with all other scales, except for the Tolerance and Self-Presentation scales (*see* Table 1).

Finally, the Engagement factor is made up of items indicating the willingness to engage with others, openness and the ability to self-regulate one’s emotions. An example item from this scale is: “Even after I’ve made up my mind about something, I am always eager to consider a different opinion.” This scale is positively and significantly correlated with all other scales except Tolerance of Uncertainty and Self-Presentation (*see* Table 1).

Table 1 Correlations Among the Scales

Scale Dimension	1	2	3	4	5	6
1. Cultural Adaptability	--					
2. Determination	.46**	--				
3. Tolerance of Uncertainty	-.13**	.07**	--			
4. Self-Presentation	-.05**	-.19**	-.06**	--		
5. Mission Focus	.58**	.48**	-.29**	-.17**	--	
6. Engagement	.55**	.50**	-.10**	-.12*	.73**	--

** Correlation is significant at the 0.01 level (2-tailed).

EXAMINATION OF SCALE PROPERTIES

For these analyses, we used the entire sample ($N = 4,840$) to estimate the internal consistency reliability (i.e., Cronbach’s coefficient α) of scores on the resulting scales for the six factors determined in the previous steps (*see* Table 2).

Table 2 Scale Means, Standard Deviations, and Internal Consistency Reliabilities

Scale Dimension	Scale Mean	Standard Deviation	Cronbach’s Alpha
Cultural Adaptability (18 items)	4.78	.96	.94
Determination (7 items)	4.21	.86	.70
Tolerance of Uncertainty (11 items)	3.16	.82	.84
Self-Presentation (4 items)	3.01	1.19	.75
Mission Focus (7 items)	4.71	.92	.88
Engagement (11 items)	4.31	.87	.88

We also estimated the correlations of the scales with the demographic variables (see Table 3).

Table 3 Correlations Between Scales and Demographic Variables

Scale	Gender ^a	Pay Grade ^b	Age Range ^c
Cultural Adaptability	-.02	.04**	.10**
Determination	.00	.15**	.20**
Tolerance of Uncertainty	.02	-.01	-.03*
Self-Presentation	-.02	-.19**	-.29**
Mission Focus	-.01	.14**	.24**
Engagement	-.01	.08**	.17**

** Correlation is significant at the 0.01 level (2-tailed).

^a Male=1, Female=2

^b (1-3)=1, (4-6)=2, (7-8)=3, (9-10)=4, (11-13)=5, (14-15)=6.

^c (18-20)=1, (21-24)=2, (25-29)=3, (30-35)=4, (36-40)=5, (40+)=6.

NEXT STEPS

In order to validate the 3CI, criterion data will be collected in the form of supervisory ratings of observed behavior in the field. A well-developed tool will support decisions about training, education, and operations.

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